Validation of a New Species of *Schwartzia* (Marcgraviaceae) and Synopsis of the Genus for Ecuador

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ABSTRACT. A new species of *Schwartzia*, *S. pterosara*, is validated. This species is known only from the vicinity of Baeza, Napo Province, Ecuador. A key to and a synopsis of the Ecuadorean species of *Schwartzia* are provided. Four *Schwartzia* species are presently recognized from Ecuador, with *S. chocoensis* and *S. diaz-piedrahitae* as first records for the country.

RESUMEN. Se valida una nueva especie de *Schwartzia*, *S. pterosara*. La nueva especie se conoce únicamente de los alrededores de Baeza en la Provincia de Napo (Ecuador). Se presentan una clave y una sinopsis para las especies ecuatorianas de *Schwartzia*. Así, *Schwartzia* está representado en Ecuador por cuatro especies, siendo registradas por primera vez para el país *S. chocoensis* y *S. diaz-piedrahitae*.

Key words: Ecuador, Marcgraviaceae, *Norantea*, *Schwartzia*.

Schwartzia Vellozo is a small genus of the Neotropical family Marcgraviaceae comprising 17 species distributed in wet lowland forests or montane rain and cloud forests from Costa Rica to southern Brazil, and also in the Lesser Antilles. This genus is easily distinguished from *Norantea* Aublet and other related genera [*Marcgraviastrum* (Wittmack ex Szyszylowicz) de Roon & S. Dressler and *Sarcopera* Bedell, which constitute the Norantea complex] by its relatively short raceme with flowers that are borne on long pedicels, and by the stalked cymbiform, cyathiform or helmet-shaped nectaries that are attached at or below the middle of the pedicel, or only rarely at the base of the pedicel, e.g., *S. diaz-piedrahitae* Giraldo-Cañas. The flowers in *Schwartzia* are larger than those found in *Norantea*. A key to the four genera of the Norantea complex was provided in Giraldo-Cañas (2003).

A thorough taxonomic treatment of the Norantea complex was the unpublished Ph.D. thesis of Bedell (1985). Additional research on the group has been carried out by de Roon and Dressler (1997) and Giraldo-Cañas (2001a, 2001b, 2001c, 2002a, 2002b, 2002c, 2003). *Schwartzia pterosara*, a new species proposed by de Roon and Bedell (Bedell, 1985) is validated here. The description, Latin diagnosis, and taxonomic history are based on Bedell (1985), with some changes made herein.

Schwartzia pterosara de Roon & Bedell ex Giraldo-Cañas, sp. nov. TYPE: Ecuador. Napo: along rd. betw. Quito & Baeza, 3 mi. W of Baeza, 0°25′S, 77°51′W, 2000 m, 2 Oct. 1980, *T. B. Croat 50284* (holotype, MO; isotypes, GH, MARY not seen). Figure 1.

Frutex. Folia obovata (5–)8–12.5 cm longa et (2.2–)3.8–6.2 cm lata basibus acutis apicibus obtusis; glandes hypophyllae 50–68 in quoque folio in aequalibus seriebus 1–11 mm distantibus ex marginibus foliorum. Axes inflorescentiarum 10–17.2 cm longi; flores 18–42; pedicelli 3.5–5.5 cm longi et 2–3 mm lati basin versus 4–5 mm lati apicem versus; nectaria cyathiformia, 0.6–1.0 cm longa, 0.8–1.6 cm ex basibus pedicellorum inserta; stamina 12; ovarium 5-loculatum; stigma mammiforme.

Sprawling epiphytic shrubs; branches woody and subterete with glabrous, grayish yellow bark and longitudinal lenticels. Leaves petiolate and coriaceous, dull green above, reddish brown below, producing a non-ciliate fracture when broken perpendicular to the midvein; petioles 3–6 × 2–3 mm; lamina obovate, (5–)8–12.5 × (2.2–)3.8–6.2 cm, base acute to cuneate, apex obtuse, mucronate or occasionally retuse through the loss of the mucron with 50 to 68 small- to medium-sized hypophyllous glands per lamina in 2 ± uniform rows located 1–11 mm from the margin; midvein obscure or impressed above, prominulous below, lateral veins obscure on both surfaces or prominulous below. Inflorescence a dense, multiflorous, broom-like raceme, axis 10–17.2 cm long, with 18 to 42 flowers borne on slender, tapered pedicels 3.5–5.5 cm long, 2–3 mm wide basally, thickening to 4–5 mm apically, attached to rachis at angles of 45°–85°; foliaceous bracts ovate, 1.4–2.1 × 0.9–1.2 cm, each with 3 pairs of hypophyllous glands; nectariferous bracts leathery and somewhat succulent, greenish red, cyathiform, 0.6–1 × 0.6–0.8 cm on attenuate stalks

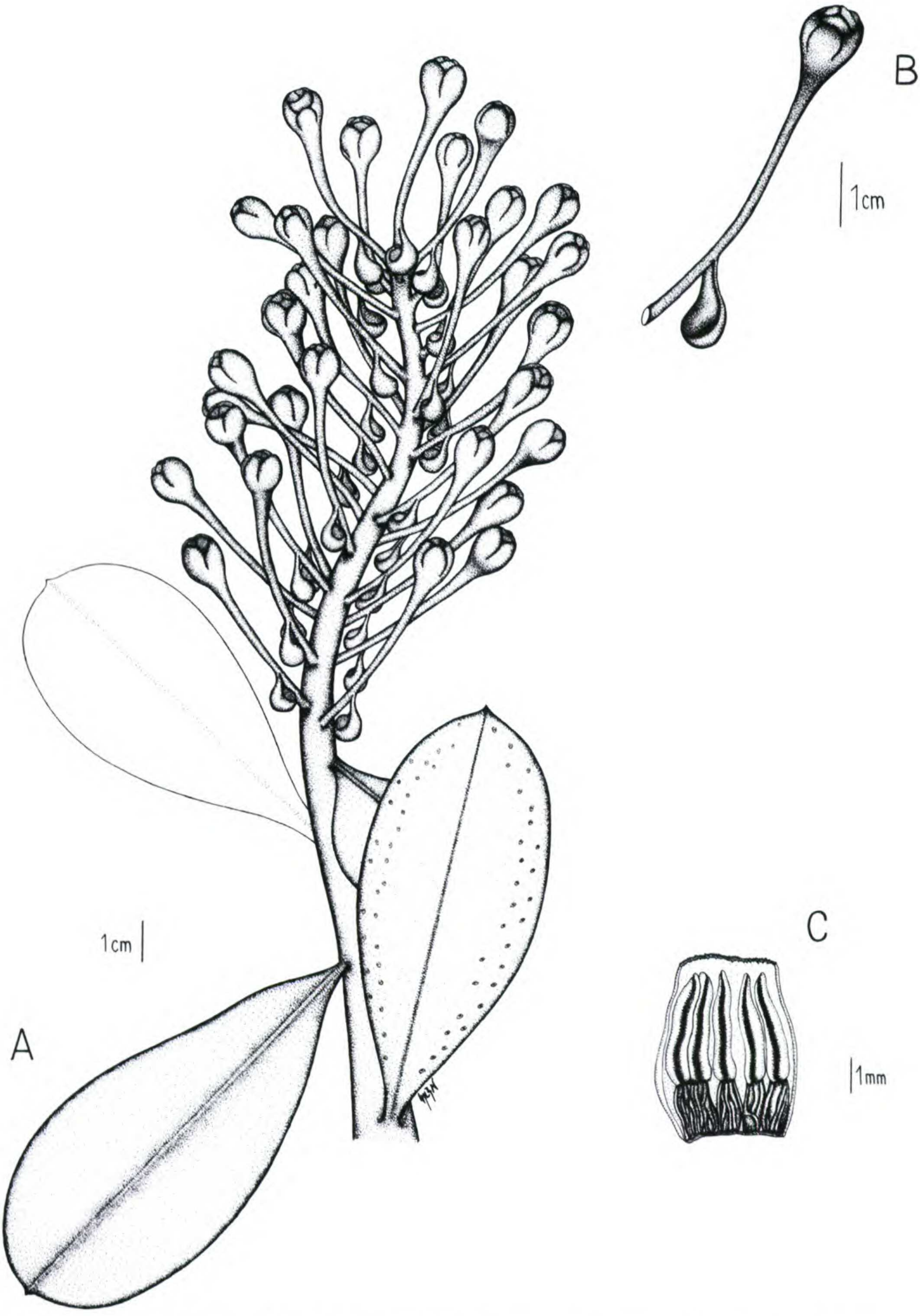

Figure 1. *Schwartzia pterosara* de Roon & Bedell ex Giraldo-Cañas. —A. Floriferous branch. —B. Bud and nectariferous bract. —C. Part of corolla with attached immature stamens (from *Croat 50284*, holotype, MO).

3–4 mm long, attached 0.8–1.6 cm from the base of pedicels. Flowers pale green with red at maturity; buds 0.6–0.9 cm long; bracteoles elliptic to obovate with membranaceous margins, (4–)8–11 × (4–)7–9 mm, tightly appressed to the calyx; sepals orbicular with membranaceous margins, (4–)5–7 mm long and wide; petals free, elliptic to oblanceolate, 8–11 × 3–5 mm; stamens 12, 6–8 mm long; filaments free, flattened and broader apically, adnate basally to the corolla; anthers subsaggitate, pollen bright yellow; ovary pyriform or turbinate, 4–5 mm tall, 5-locular; style cylindrical, 1 mm tall; stigma smooth, mammiform. Fruit 0.9–1.1 × 0.8–1 cm, globose, apiculate, green or brown; seeds reniform to elliptic, reticulate, shiny, numerous, 1.2–1.5 × ca. 0.7 mm.

Distribution and habitat. *Schwartzia pterosara* is known only from wet Andean forests at 2000 m in the vicinity of Baeza (Napo, Ecuador). However, there may be more specimens at other herbaria from Ecuador (e.g., QCA, QCNE, GUAY), but unfortunately I do not have access to their collections. It is hoped that increased collecting activity will yield additional specimens of this species.

Bedell (1985) cited another collection from Colombia [*Cuatrecasas 23618* (F, US)], but I have not seen it, despite the Curators of F and US sending me all their Marcgraviaceae collections (with the exception of vouchers belonging to *Marcgravia*) deposited in these herbaria. Stefan Dressler (FR, pers. comm.) said there is one specimen from Peru at FR and MO (*Campos & Núñez 4612*), but I have not seen this collection either. If these collections belong to *S. pterosara*, the distribution of the species is broader than stated above.

Phenology. Flowering September to October; fruiting June to July.

Etymology. The epithet *pterosara* is composed by the Greek words *pteron*, feather, and *saron*, broom, referring to the feathery, broom-like appearance of the inflorescence.

Schwartzia pterosara differs from the other species of the genus by its large number of hypophyllous glands, its dense, multiflorous raceme, tapered pedicels, and the size and shape of the nectaries. With these new species, four *Schwartzia* species are presently recognized for Ecuador (*S. chocoensis* Giraldo-Cañas, *S. diaz-piedrahitae*, *S. lozaniana* Giraldo-Cañas, and *S. pterosara*).

Paratype. ECUADOR. **Napo:** vic. Baeza, 2000 m, *L. Besse, H. Kennedy & R. Baker 1504* (MO).

A Synopsis of the Genus *Schwartzia* in Ecuador

Schwartzia Vellozo, Fl. Flumin. 5: 221. 1825 [1829]. TYPE: *Schwartzia glabra* Vell. [= *Schwartzia brasiliensis* (Choisy) Bedell ex Giraldo-Cañas].

Sprawling terrestrial or epi- to hemiepiphytic shrubs. Leaves spiraled, subsessile or petiolate, blades glabrous, oblong, elliptic, or obovate, occasionally asymmetrical, venation brochidodromous, obscure or impressed above, obscure to prominent beneath, coriaceous, with hypophyllous glands. Inflorescence racemose, terminal, rarely lateral, multiflorous or occasionally pauciflorous; flowers pentamerous, borne on elongate pedicels, subtended by the stalked sacciform, tubular, cymbiform, cyathiform, or helmet-shaped nectaries that are attached at or below the middle of the pedicel, or only rarely at the base of the pedicel (e.g., *S. diaz-piedrahitae*); sepals 5, imbricate in 2 whorls; petals 5, free or basally connate, reflexed at anthesis; stamens 10 to numerous, rarely 5, in 1 or several whorls; filaments linear to broad and somewhat flattened, free or basally connate and occasionally adnate to base of petals; anthers basifixed to subbasifixed, subcordate or subsagittate; ovary conical, pyriform, or turbinate, completely or incompletely 3- to 5-locular; stigma mammiform, subsessile, lobed or radiate. Fruit capsular, globose to subglobose, apiculate with persistent style and stigma, loculicidally and septifragously dehiscent from the base; seeds hemispherical or reniform, reticulate, few to numerous, and with a shiny black testa.

Vellozo (1825) described the genus *Schwartzia* based on a single species, *S. glabra*, a small tree of the coastal forests of Brazil characterized by having slightly evaginated nectariferous bracts inserted at or near the middle of the pedicel. This tree proved to be the previously described *Norantea brasiliensis* Choisy (1824). *Schwartzia* was soon placed in synonymy, and its species referred to *N. brasiliensis* [= *S. brasiliensis* (Choisy) Bedell ex Giraldo-Cañas]. Delpino (1869), however, noted the distinctive bract position and proposed a monotypic subgenus, *Norantea* subg. *Cochliophyllum*, for *N. brasiliensis*. More recently, the genus *Schwartzia* was revived by Bedell (1989) and recognized by de Roon and Dressler (1997) when they accepted the segregation of the Norantea complex in four genera (*Marcgraviastrum*, *Norantea*, *Sarcopera*, and *Schwartzia*).

KEY TO THE ECUADOREAN SPECIES OF *SCHWARTZIA*

1a. Nectariferous bracts cyathiform, 0.6–1 cm long; 50 to 68 hypophyllous glands per lamina; bracteoles (4–)8–11 mm long; sepals (4–)5–7 mm long; petals 8–11 mm long . . . . . *S. pterosara*
1b. Nectariferous bracts saccate, tubularifom to globose, 0.9–3.3 cm long; 0 to 14 hypophyllous glands per lamina; bracteoles 1.8–5 mm long; sepals 2–7 mm long; petals 5–13 mm long.
2a. Nectariferous bracts attached at the base of the pedicel; stamens 14 . . . *S. diaz-piedrahitae*
2b. Nectariferous bracts attached 1–1.6 cm from the base of the pedicel; stamens 22 to 50.
3a. Stamens 22 to 26; bracteoles ca. 2 mm long; sepals 2.2–2.8 mm long; ovary ca. 2.5 mm long; ovary 4-locular; urn of the nectariferous bracts 0.9–1.7 cm long . . . . . *S. lozaniana*
3b. Stamens 50; bracteoles 2.5–5 mm long; sepals 4–7 mm long; ovary 3–8 mm long; ovary 5-locular; urn of the nectariferous bracts 1.5–3.3 cm long . . . . . *S. chocoensis*

1. Schwartzia chocoensis Giraldo-Cañas, Revista Acad. Colomb. Ci. Exact. 25: 478. 2001. TYPE: Colombia. Chocó: carr. Ansermanuevo–San José del Palmar, 8.4 km del Alto del Galápago, 1600 m, 19 Feb. 1977, *E. Forero, A. Gentry, A. Sugden & D. Daly 3000* (holotype, COL; isotypes, CHOCO, MO).

Description and illustration: Bedell (1985: 202–206, as "Schwartzia foreroi" de Roon & Bedell, *nomen nudum*); Giraldo-Cañas (2003: 10–12).

Schwartzia chocoensis is easily recognized by its large flowers on long and thick pedicels, with succulent, saccate or tubularifom nectaries, and by its long leaves. This species was known only from the Chocó region of Colombia (Bedell, 1985: 203–206; Giraldo-Cañas, 2003: 12). Recent studies of the Norantea complex have revealed its occurrence in one locality in Pichincha Province, Ecuador. The study of specimens from Colombia and Ecuador leaves no doubt about their identity. *Schwartzia chocoensis* occurs as a sprawling shrub in different types of wet forests below 1600 m. "Schwartzia foreroi" de Roon & Bedell is a *nomen nudum* that appears in Bedell (1985: 202) and in Forero and Gentry (1989: 103); it is synonymous of *S. chocoensis.*

Additional specimens examined. ECUADOR. **Pichincha:** km 110 Quito-Nono-Tandayapa-Mindo-Puerto Quito, *C. Dodson & A. Embree 13091* (MO).

2. Schwartzia diaz-piedrahitae Giraldo-Cañas, Revista Acad. Colomb. Ci. Exact. 25: 480. 2001. TYPE: Colombia. Valle del Cauca: Bajo Calima, Concesión Pulpapel/Buenaventura, 3°55′N–77°W, 100 m, 17 Oct. 1984, *M. Monsalve 484* (holotype, COL; isotypes, JAUM, MO, NY).

Description and illustration: Bedell (1985: 168–172, as "Schwartzia colombiana" de Roon & Bedell, *nomen nudum*); Giraldo-Cañas (2003: 12–14).

This species is unusual by having its nectariferous bracts attached at the base of the pedicel, a feature unique within the genus *Schwartzia. Schwartzia diaz-piedrahitae* was known only from the Chocó region in Colombia (Bedell, 1985: 169–170; Giraldo-Cañas, 2003: 13). However, recent studies of Colombian and Ecuadorean specimens have confirmed its presence at one locality in the province of Carchi, Ecuador. This species is a common and sometimes abundant element of wet lowland forests at 0–450 m. "Schwartzia colombiana" de Roon & Bedell is a *nomen nudum* that appears in Bedell (1985: 168) and in Forero and Gentry (1989: 103); it is synonymous with *S. diaz-piedrahitae.*

Additional specimens examined. ECUADOR. **Carchi:** trail along plain above Tobar-Donoso & Río Guape, *W. Hoover 1254* (MO).

3. Schwartzia lozaniana Giraldo-Cañas, Caldasia 23: 384. 2001. TYPE: Colombia. Nariño: Junín–Tumaco rd., 6–11 km W of Junín, roadside thickets & forest edge, 850–1030 m, 27 Feb. 1979, *J. Luteyn & M. Lebrón-Luteyn 6880* (holotype, COL; isotypes, MO, NY, U not seen).

Description and illustration: Bedell (1985: 198–201, as "Schwartzia venusta" de Roon & Bedell, *nomen nudum*); Giraldo-Cañas (2003: 15–17).

Schwartzia lozaniana is easily recognized by its flowers borne on long and slender pedicels, its saccate nectaries, and its elliptic-obovate to oblong leaves with acuminate to attenuate apices. This species has been recorded in Nariño (southern Colombia) and Esmeraldas (Ecuador) (Giraldo-Cañas, 2001b, 2003) and now, too, in the province of Carchi (Ecuador). *Schwartzia lozaniana* is uncommon in Colombia and Ecuador, and its occurrence is limited to some wet montane forests at 400–1600 m.

Additional specimens examined. ECUADOR. **Carchi:** trail to Río Gualpi Chico, along ridge line near Awa encampment, *W. Hoover et al. 2538* (MO); border area betw. Carchi & Esmeraldas, ca. 20 km past Lita on rd. Lita–Alto Tambo, *H. van der Werff et al. 11992* (MO). **Esmeraldas:** Quinindé Cantón, Bilsa Biol. Stat., Res. Ecol. Mache-Chindul, 40 km NW of Quinindé, Loma de los Guerrilleros, *J. Clark et al. 3974* (COL); Lita–San Lorenzo rd., 18 km W of Río Lita Bridge, on old rd. below Lita, 6.6 km W of bridge over Río Chuchubí, *T. Croat et al.*

82631 (MO); Lita–San Lorenzo rd., 10–20 km NW of Lita, *A. Gentry et al. 70088* (MO).

4. Schwartzia pterosara de Roon & Bedell ex Giraldo-Cañas.

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